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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/668,448	09/22/2000	Mohammod Ali	4015-755	2160

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RALEIGH, NC 27602

EXAMINER

TRAN, TUAN A

ART UNIT	PAPER NUMBER
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2682

DATE MAILED: 06/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/668,448

Applicant(s)

ALI, MOHAMMOD

Examiner

Tuan A Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because there are less than 50 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sassi (6,487,396) in view of Itoh (5,999,831) and further in view of Hayes et al. (6,529,749).

Regarding claims 22-24, Sassi discloses a mobile terminal (See figs. 1-3) comprising: a body 2; an inherently printed circuit board positioned within the body 2 wherein electronic circuitry positioned on the printed circuit board (See figs. 2-3 and col. 5 line 66 to col. 6 line 56); an antenna 10 for voice communication at a first frequency and operatively connected to the electronic circuitry (See fig. 2-3 and col. Col. 2 lines 29-49, col. 6 lines 5-10); a flip portion 3; and a hinge mechanism 4 having a plurality of hinge portions wherein the hinge mechanism connects the flip portion to the body 2 physically and electrically (See figs. 2-3 and col. 5 line 24 to col. 6 line 56). However,

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Sassi does not mention that the hinge mechanism comprises an auxiliary antenna wherein the auxiliary antenna is an inverted-F antenna that operates within GPS and Bluetooth frequency bands. Itoh suggests placing an antenna at a hinge portion of the portable telephone (See figs. 3-4 and col. 3 lines 21-52, col. 4 lines 32-37). Hayes teaches to place an inverted-F antenna within the confines of a radio telephone (See fig. 1) wherein the inverted-F antenna, comprising two conductive branches which can also radiate as separate inverted-F antenna, may be used for multiple receivers and/or transmitters (See figs. 4A-4D and col. 1 lines 47-58, col. 3 lines 8-25, col. 7 line 13 to col. 8 line 20) and operates within GPS and Bluetooth frequency bands (the Bluetooth technology provides a universal radio interface in the 2.45 GHz frequency band) (See col. 1 lines 32-61, col. 2 lines 24-26, col. 2 line 65 to col. 3 line 25). Since both Sassi and Itoh disclose about mobile phone comprising flip portion, and since Itoh suggests to place an antenna at the hinge portion while Hayes also suggests using inverted-F antennas for radiotelephone undergoing miniaturization (See col. 1 lines 59-62); therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the suggestions and teachings of Itoh and Hayes in modifying the mobile terminal as disclosed by Sassi by placing inverted-F antennas at hinge portions of the hinge mechanism of the mobile terminal for the advantage of expanding the capability of the mobile terminal to various frequency spectrums as well as miniaturizing the mobile terminal.

Claims 1-3, 5-8, 19-20 are rejected for the same reasons as set forth in claims 22-24.

Claims 13-16 and 21 are rejected for the same reasons as set forth in claims 22-24, as method.

Regarding claim 4, Sassi & Itoh & Hayes disclose as cited in claim 1. However, they do not mention that the antenna operates within ISM band. ISM band is well known in the art, therefore it would be obvious to person skilled in the art to configure the antenna such that it can operate within the ISM band in order to expand the capability of the mobile terminal to various frequency spectrums.

Regarding claims 9-12, Sassi & Itoh & Hayes disclose as cited in claim 8. Hayes further discloses the mobile terminal further comprises two fasteners attaching the antenna to the printed circuit board wherein one of the two fasteners acts as a connection to ground for the antenna and the other acts as an RF feed for the antenna (See figs. 3, 5 and col. 5 line 66 to col. 6 line 8, col. 8 lines 21-42). However, they do not mention that the fasteners are screws. Screws are common in the art and also conductive, therefore it would be obvious to person skilled in the art to use screws as fasteners for the advantage of expanding the application of the mobile terminal.

Claim 17 is rejected for the same reasons as set forth in claims 9-12, as method.

Regarding claim 18, Sassi & Itoh & Hayes disclose as cited in claim 13. However, they do not mention that opening and closing the hinge during the operation of the mobile terminal. It should be necessary to establish opening and closing the hinge during the operation of the mobile terminal such as opening the hinge during transmission/reception processes of the mobile terminal in order to enhance the quality of signal transmission/reception level.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Dolman et al. (6,272,356) discloses mechanical spring antenna and radiotelephones incorporating same.
- Thompson et al. (5,809,433) discloses multi-component antenna and method therefor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan Tran** whose telephone number is **(703) 605-4255**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Vivian Chin**, can be reached at **(703) 308-6739**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

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Tuan Tran

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VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

6/2/03